

An Overview of the Miller and Walker Creek Basins

The Miller and Walker basins comprise approximately 8 square miles bordered on the north by SW 108th St, on the south by the northern boundary of the City of Des Moines, on the east by the Seattle-Tacoma International Airport and the area immediately north of it, and on the west by Puget Sound. Development within the basins is a combination of residential neighborhoods, mostly single family development, and commercial areas. SR 509 passes through the watershed in a north-south direction; SR 518 runs to the east from SR 509. In addition to some future residential and commercial infill development and redevelopment, the Port is proposing to construct a third runway on the eastern edge of the basins (where 12th Av. S is currently located). If constructed, approximately 50% of the stormwater from this new impervious surface will, after treatment and detention, flow into the Miller Creek basin; approximately 25% will, after treatment and detention, flow into the Walker Creek basin (the remainder will flow into the Des Moines Creek basin).

The Miller and Walker basins contain three distinct physiographic subdivisions – upland, ravine, and alluvial fan. The upland portion is characterized by rolling, relatively low-gradient topography. Natural surface drainage in this part of the basins is generally conveyed in low-gradient channels that feed and drain natural wetlands. Surface drainage from this upland area flows into a network of steep and steep-sided ravines that convey the streams from the uplands down to sea level. This upland area has the highest level of development.

The ravines are much less intensively developed than the uplands, and there are relatively undisturbed riparian zones and wide greenbelts adjacent to the channels through much of this ravine section. Channel erosion and landsliding are not major problems in these ravine areas at the present time. These erosional processes are natural in this landscape, however, and may be dramatically accelerated by human alteration.

As Miller and Walker Creeks approach sea level, the channel gradients decrease as the streams emerge from their ravines and flow across their deltas as they approach the modern shoreline. Under pre-development conditions, much of this area was wetland

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and tidal estuary. Filling and channelization of Miller and Walker Creeks has produced the present ground surface. Sediment accumulation in this area, especially where Walker Creek crosses under 13th Av. SW, is probably a reflection of both an increased upstream sediment supply due to human disturbance and a naturally depositional environment. Sediment discharged from the mouth of Miller Creek provides an important source of sediment to the marine shoreline of Three Tree Point.

In general, the basins lack stream complexity (i.e., almost entirely riffles with few pool areas and, in some reaches, no ability to meander) and have water quality problems associated with urban development, in particular high levels of metals. There are also some localized areas of erosion, sediment deposition, and flooding. There are also, however, some good areas of habitat (e.g., the lower reaches and headwater wetland in Walker Creek; the lower and middle reaches in Miller Creek). There are several hundred wild chum, hatchery coho, and sea-run cutthroat that utilize the system.

There are also two closed depressions in the Miller Creek basin, Hermes and SW 142nd St. Localized flooding has occurred within the depressions for many years. Infiltration and pumping of storm water to sanitary sewers and to Miller Creek have been utilized in the past to relieve flooding. Recent studies have suggested modifying the facilities to improve flood control.

Challenges for the basins include attenuating peak flows and flow durations, improving water quality, increasing riparian corridor functions (more shade, more native vegetation, less urban encroachment), increasing channel complexity through the addition of large woody debris, restoring estuarine functions at the mouth of the watersheds, and reducing local flooding and erosion. Development of solutions to basin problems will require careful consideration of the interactions within the basins and realistic expectations of what can be achieved in a fully urbanized area.